

Treatment Technology Solicitation for PCB and Dioxin/Furan Contaminated Sediments

Issue Date: March 12, 2002

Due Date/Time: July 19, 2002, 5:00 pm EST

Attached is the Treatment Technology Solicitation Application for solicitation of remedial technologies for treating PCBs and Dioxins/Furans in contaminated sediments in a saltwater environment. To be considered for this demonstration program, respondents must submit an original application and four (4) copies by the due date to:

**Ms. Ruth Goller
U.S. Environmental Protection Agency
National Risk Management Research Laboratory
26 W. MLK Drive
Cincinnati, Ohio 45268**

Questions regarding this TTA should be directed to:

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Note: *EPA will not accept applications containing confidential business information (CBI). Applications received containing CBI will be returned to the applicant without review.*

Treatment Technology Solicitation for PCB and Dioxin/Furan Contaminated Sediments

Solicitation Objectives

The purpose of this Treatment Technology Application (TTA) is to solicit alternative *in-situ* bioremedial treatment alternatives that can be demonstrated at a selected site in Hawaii for removing or destroying PCBs and Dioxins in contaminated sediments in a saltwater environment. Technologies selected must be able to handle moderate concentrations of PCBs and Dioxins/Furans in the presence of other organic compounds, and, potentially, metals. The technologies will be demonstrated under controlled conditions so that proper scientific evaluations and assessments are possible. The size of demonstrations will be of such a magnitude to enable scale-up without having to make unsupported assumptions. The host site and EPA have determined that technologies incorporating *in-situ* bioremedial treatment alternatives will be given preference in selection.

Solicitation Structure

This TTA consists of two (2) sections:

- Section 1: Summary of program requirements and areas of interest for this solicitation.
- Section 2: Application requirements (general, outline, and discussion) and a description of the criteria used to evaluate applications.

Introduction

The U.S. Environmental Protection Agency (EPA) is engaged in an effort to demonstrate and verify the cost and performance of new environmental cleanup treatment technologies for PCBs and Dioxins/Furans in sediments. Specifically, its purpose is to solicit *in-situ* bioremedial treatment alternatives to treat PCB and Dioxin/Furan contaminated sediments in the presence of seawater at a selected host site. The objective is to demonstrate and verify field application of *in-situ* bioremedial treatment technologies that would render the contaminated sediments clean to a yet to be negotiated regulatory level. The results of the evaluations will provide reliable engineering, performance, and cost information for treatment decision makers and technology vendors.

The primary contaminants of concern are polychlorinated biphenyls and polychlorinated dioxins/furans. *In-situ* bioremedial treatment technologies are the most likely candidates for cost-effective treatment and are only being considered as part of this solicitation.

SECTION 1. PROGRAM REQUIREMENTS AND DESCRIPTION OF HOST SITE

The Hawaii selected host site responsibilities include providing power, site access, and physical support for the process (paving, concrete pad, containment, etc.). Proper disposal of waste generated during the demonstration is also the responsibility of the site applicant. EPA will provide support for specific tasks in the demonstration including test plan preparation, rigorous sampling and analysis, and report writing. The technology supplier's responsibilities include provision, installation and start-up of the technology, daily operation and maintenance, troubleshooting, and system shutdown at the end of the demonstration.

The funding mechanism will be in the form of a Contract between the host site and the technology vendor. Funds are not exchanged between EPA and the technology supplier. Prior to the demonstration, a no-funds agreement is signed by the technology supplier(s) and EPA to define the areas of responsibility. The application developed in response to this TTA will be the basis for the agreement with EPA and must, therefore, contain sufficient details about the proposed technology and the actual treatment it provides.

The Naval Facilities Engineering Command, Pacific Division (PACDIV), Pearl Harbor, Hawaii has been selected as a host for the treatment technology demonstration and evaluation. The demonstration is to be conducted in the proximity of the Ford Island Landfill located in the middle of Pearl Harbor.

The sediments in proximity to the Ford Island Landfill were characterized in a sampling event conducted in 1998 by PACDIV. Five sediment samples were collected below seawater in an area offshore of the Ford Island Landfill. The column of water above the sediments ranges from 0 to 40 feet. The samples were collected by scraping the surface of the sediments down approximately 2 inches. The total PCB concentrations ranged from 67 to 8,448 parts per billion and the total Dioxins/Furans concentrations ranged from 191 to 5,540 parts per trillion. PACDIV along with State and Federal regulators are currently negotiating a target clean up level for the sediments contamination. The levels are expected to be decided in Spring 2002. The technology vendor is expected to be able to meet these requirements when announced.

Infrastructure available for support of a demonstration includes the basewide utility network including three-phase electrical power service, and treated fresh water.

SECTION 2. APPLICATION REQUIREMENTS AND EVALUATION CRITERIA

General

This section describes requirements for preparation of proposals. Each developer is required to submit a technical proposal, and EPA may make multiple selections of technologies for demonstration projects. The order of material presented in the technical proposal should correspond to the order of the "Outline of Evaluation Criteria" shown later in this section. This

outline is designed to cover material necessary for evaluating the proposal. Technologies will be selected for participation in the program on the basis of their readiness and suitability for field-scale demonstration, their applicability to situations involving PCB and Dioxins/Furans contamination of sediments using bioremedial techniques, their cost-effectiveness, their potential for commercialization, and their ability to fill existing gaps in knowledge. The demonstration program is not designed to be a developmental arena where equipment and technologies are constructed, tested, modified, and redesigned.

The general descriptions of evaluation criteria in "Discussion of Evaluation Criteria" are provided as assistance in effectively addressing the criteria in the proposal and do not represent comprehensive discussions of each element. Selection or rejection of a proposed technology by EPA will reflect a judgement based on the material presented by the developer in the proposal and the needs and resources of EPA and PACDIV.

The number of pages presented in the proposal shall not exceed thirty (30), including charts, tables, diagrams, and drawings. Font used shall be 12-pt. Times New Roman, and the typing shall be single-spaced with margins set at 1-inch all around. A summary of previously acquired data is particularly important as part of the application, and reports or papers covering the offered technology may be appended to the proposal. References also may be attached as an appendix. Company literature, brochures, resumes, and references also may be attached as appendices. All appended materials, however, will be counted toward the 30-page limit for proposal length. Proprietary data or confidential business information should not be included at this point.

An original and four (4) copies of the proposal are required. After review of all proposals, EPA and PACDIV may request a meeting with the developer to discuss questions or concerns raised during the review process.

Outline of Evaluation Criteria

I. Technology Factors

A. Technology Characterization

1. Technology Description and Function
2. Process Flow Sheet (indicating all streams)
3. Technology Capabilities and Limitations

B. Description of the Equipment

1. Physical Appearance
2. Unit size and Transportability
3. Treatment Capacity (throughput range)
4. Availability

C. Waste Streams Treated

1. Contaminants
2. Media
3. Problem Wastes
4. Concentrations of Feed and Product Streams

D. Material Handling Needs

1. Delivery and Removal of Equipment
 2. Pre- and Post-Treatment Requirements
- E. Types and Quantities of Waste Streams or Residues Generated
 1. Gases and Particulates
 2. Liquids
 3. Solids and Sludges
- II. Performance Factors
 - A. History or Background of Process Development
 - B. Bench/Pilot-Scale Test Data
 - C. Advantages Over Similar Technologies
- III. Developer Factors
 - A. Experience and Availability of Assigned Key Personnel
 - B. Company Profile
 1. Waste Treatment Experience
 2. Internal Support
 3. Anticipated Subcontracting Needs
 - C. Capability to Commercialize
 1. Marketing Strategy
 2. Projected Unit Cost of Treatment
- IV. Regulatory Compliance

Discussion of Evaluation Criteria

Technology Factors

This section of the proposal should deal primarily with explaining the technical aspects of the process and describing its operation. Its capabilities and limitations should be addressed along with information about duration of the test period, availability of equipment, wastes to be treated, etc.

Technology Characterization

The Developer must describe the technology proposed for demonstration including limitations. The description should include the concepts upon which the technology is based, the purpose of the technology, and all of the process steps involved in its use. Narrative, drawings, photos, and diagrams may be used as appropriate. It is very important that this description be clear, concise, and complete.

Description of the Equipment

Provide a description of the actual treatment units or techniques proposed for the demonstration. This discussion should concentrate on hardware and should include photos if appropriate. The description must address at a minimum the size and transportability of the

equipment, the treatment capacity offered, and the availability (i.e., approximate date) of the treatment equipment for a demonstration. Safety features and ease of operation may also be included.

Waste Streams Treated

It is important to include discussion of the contaminants that can be treated, and the applicable concentration ranges. Include estimates of the quantities of sediments that will be needed for adequate evaluation of the technology. This discussion should also include limiting factors for the technology, such as viscosity, metals, volatility, and any problem waste types for which the technology would not be appropriate.

Material Handling Needs

Provide details concerning the material handling requirements of the technology including equipment necessary. As part of this discussion provide information on pre-treatment and post-treatment needs associated with the demonstration system.

Waste Streams or Residues Generated

Describe the wastes that will be generated through operation of the process including those left in place. Estimate the quantity and character of the process wastes. Estimate potential unit costs for disposal of wastes generated. Include description of transient wastes created during treatment which might affect local environment. This section should address gases and particulates, liquids, solids, and sludges.

Performance Factors

This section of the proposal should deal with the operation of the technology. Discussions should cover history of development for the process and applicability to PCB and/or Dioxin/Furan sites. Of most importance for this evaluation factor is the presentation of bench-, pilot-, or field-scale data from previous testing. Provide data demonstrating remediation of aged contaminated sediments in a saltwater environment. For Bioremediation technologies, data from baseline conditions, test conditions, killed data and other controls will be important in evaluating performance.

History or Background of Process Development

Describe the steps that have been taken in bringing this technology to the demonstration stage. In addition, discuss any field experience with the proposed technology and equipment and note any waste streams or previous sites to which it has been applied.

Bench/Pilot-Scale Test Data

Provide summaries of data that have been generated by this technology in bench-, pilot-, and field-scale tests on PCB and Dioxin/Furan contaminated soils, sludges and sediments. These data must illustrate that this technology is indeed ready for field demonstration. Experimental procedures and analytical methods should be briefly summarized. Data may be presented in tabular or graphical form and may be supported by appended reports. Highlight data generated through previous projects with EPA and note the supporting offices. **This portion of the proposal is critical to the evaluation process.**

Advantages Over Technologies Treating Similar Sediments

The developer should explain the advantages of the proposed technology over similar treatment schemes. Differences or advantages over these technologies, especially those remediating similar sediments should be discussed where possible.

Developer Factors

Experience and Availability of Assigned Key Personnel

Name the key persons involved in the demonstration and briefly note their relevant experience. Include estimates of the percentage of time that each key person would have available to spend on the project.

Company Profile

Describe waste treatment experience especially with sediments that the developer's firm has gained and note special internal support that is available. This support may include engineering departments, fieldwork crews, geology/hydrogeology groups, etc. Specify anticipated needs for subcontracting or acquiring consultants by the developer. It is important here to show that the developer is capable of mounting a field demonstration.

Capability to Commercialize

Describe and discuss the capability and commitment of the developer to make the technology widely and commercially available. Explain the marketing strategy to accomplish commercialization and estimate per unit cost of treatment using this technology if possible.

Short Term Risk and Regulatory Compliance

Capability to comply with regulatory requirements

Describe the ease with which process-specific regulations and commitments in compliance agreements or orders are satisfied. Regulatory requirements include state and local laws, EPA and Department of Transportation (DOT) laws, and other laws that specify requirements or milestones. This parameter gives high scores to treatment technologies or

options that are relatively straightforward, have an operational history, and demonstrate capability to comply.

Requirements for additional permits for products or residues

Describe any regulatory permits that may be required for pre- or post-treatment products and/or residues.

Short-term risk due to technology application

Describe the risk to on-site workers, off-site populations, and the surrounding environment of applying the technology. This includes all occupational safety and health issues, mechanical and electrical hazard issues, legally driven issues, as well as reclamation required to achieve restoration. This parameter gives high marks to processes providing little or no added health or safety risk or reclamation due to collateral impact on the environment.

REVIEW AND SELECTION PROCESS

Applications will be reviewed by a panel made up of representatives from EPA and PACDIV. Applicants will be selected on the basis of their readiness and suitability, applicability to treat PCB and Dioxin/Furan sediments and potential for providing information addressing problems common to a large number of sites with sediments contaminated with chlorinated organics. Selection or rejection of a technology by EPA will reflect a judgement based on the material presented in the application and the needs and resources of EPA. All applicants will receive a written response outlining the results of the review. EPA reserves the right to reject any and all applications based on technical review or insufficient EPA funds.

SOLICITATION SCHEDULE

This solicitation for treatment technologies will be conducted according to the following schedule:

Proposals Due:	July 19, 2002
Review Technology Applications:	September 6, 2002
Field Demonstration Start-Up:	Fall 2002